

bottom. If your line for that date bends dramatically, that indicates your lake was stratified. The portion of the line that shows the greatest change in temperature represents the thermocline of your lake. The thermocline is a layer of water where there is an abrupt change in temperature that separates the warmer surface water from the colder deep water. To add your dissolved oxygen data, add a second X-axis at the top of the graph. The scale for dissolved oxygen should start at 0 and go at least 1 to 2 parts per million (ppm) above your highest recorded number for that day. Plot your dissolved oxygen results for each depth you sampled. Connect these data points with a dashed line or a different color pen. Repeat these steps to generate a water temperature and dissolved oxygen graph for each date that you sampled.

### Trophic State Index (TSI) Graph

Some of the data that you collected (Secchi depth, phosphorus, and chlorophyll) will be used to calculate the trophic state of your lake. This trophic state, or TSI, is an index of how nutrient-enriched your lake is. To graph your lake's TSI values, mark your sampling dates along the X-axis and mark the TSI range from 0 to 100 on the Y-axis (Fig. 6). Since most of Wisconsin lakes have a range of TSI values from 20 to 60, you have the option of marking this smaller range on the Y-axis. However, using a smaller range of TSI values on the Y-axis will spread your results out over the entire graph. Once all your axes are labeled correctly your graph is ready for the data. ***The TSI data for your lake will be listed on your annual report.***

Plot the TSI values generated from your Secchi depth results and connect the data points with a solid line. Plot the TSI values generated from your chlorophyll data and connect the data points with a dashed line or different color pen. Finally, plot the TSI values generated from your phosphorus results and connect the data points with a dotted line or a third color pen.

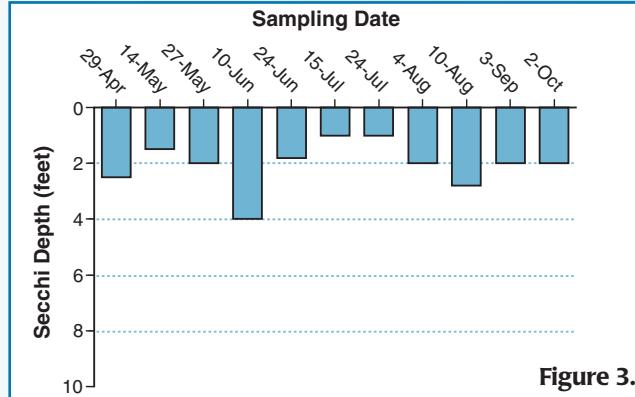


Figure 3.  
Secchi Visibility Graph, data represents 1 season.

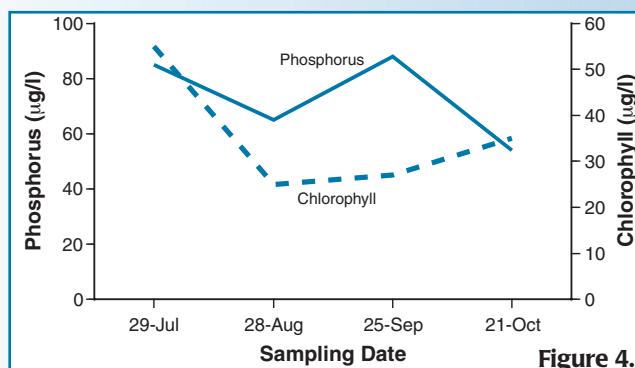


Figure 4.  
Phosphorus and Chlorophyll Graph, data represents 1 season.

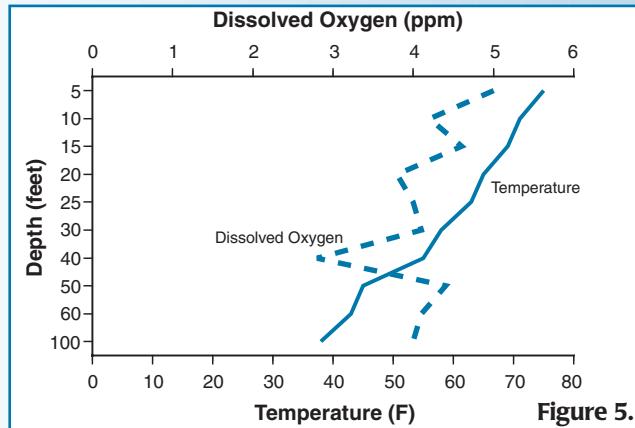


Figure 5.  
Temperature and Dissolved Oxygen Graph, data represents 1 day.

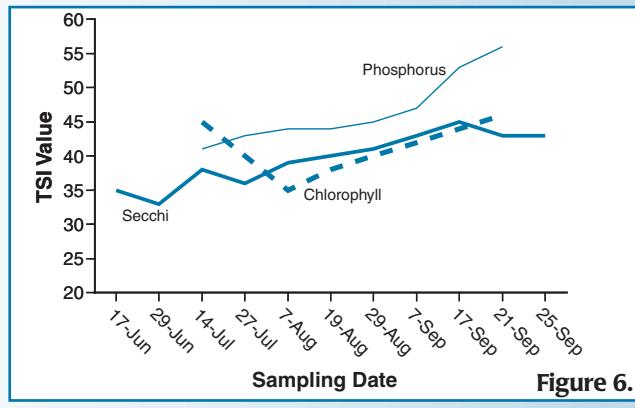
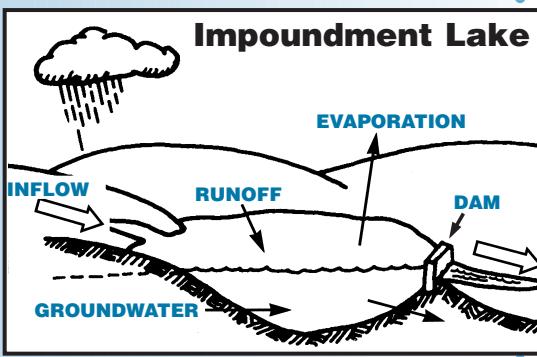
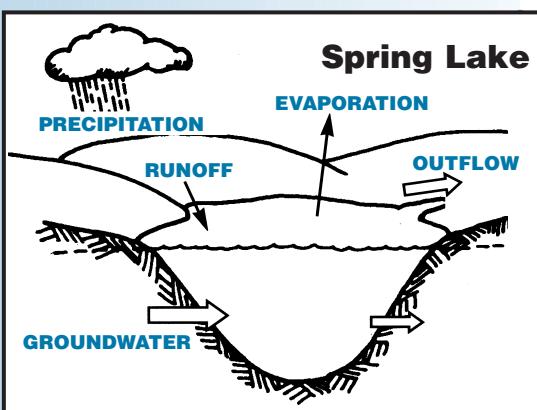
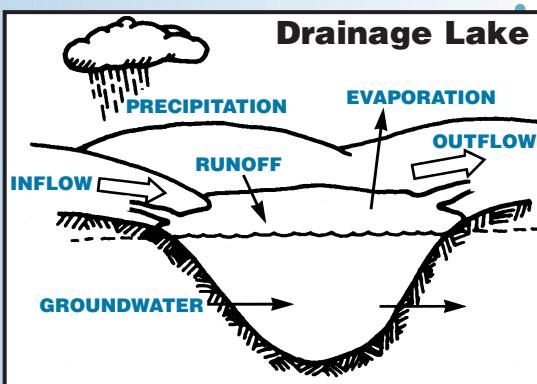
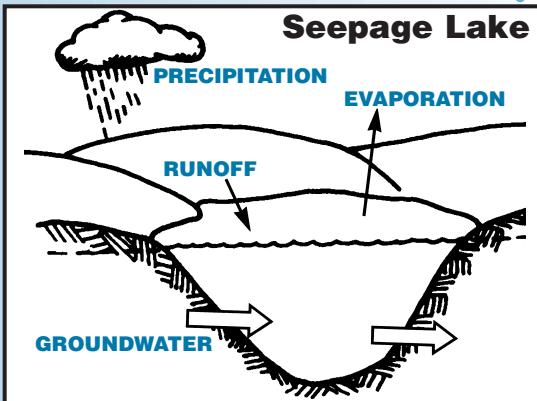


Figure 6.  
TSI Graph, data represents 1 season.

**Lake Types.** Major water inputs and outflows of different lake types. Large arrows indicate heavy water flow. (Taken from Shaw et al 2000 "Understanding Lake Data")



## Understanding Your Data

When you receive your annual report in the spring, the first thing you should do is check for errors. The easiest way to do this is to compare your report to your original records. If you find an error, please notify the Self-Help staff in the Madison office at (888) 947-3282 or (608) 264-8533 or email [Jennifer.Filbert@dnr.state.wi.us](mailto:Jennifer.Filbert@dnr.state.wi.us). You can also send your corrections to: Wisconsin DNR Self-Help Lake Monitoring, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921.

Before you review your results there are some basic things you should note about your lake: the lake type and lake **georegion**. This information can be found at the very top of your annual report. Since lakes of the same type located in the same georegion are usually comparable to one another, this information is important when comparing your lake to others.

### Lake Types

The physical characteristics of a lake can greatly influence its water quality. Two factors are especially important: the primary source of the lake's water along with its flushing rate and whether or not the lake is stratified in the summer.

**Seepage lakes** are fed mainly by precipitation and runoff, supplemented by groundwater from the immediate drainage area. These lakes do not have an inlet or permanent outlet. Seepage lakes are the most common lake type in Wisconsin. Many seepage lakes are low in nutrients, acidic, and susceptible to acid rain. These lakes usually have small watersheds.

**Drainage lakes** are fed by streams, groundwater, precipitation, and runoff. These lakes have an inlet and an outlet, and the main water source is stream drainage. Most major rivers in Wisconsin have drainage lakes along their course. Water quality in drainage lakes can be highly variable. These lakes often have large watersheds.

**Spring lakes** are fed by groundwater, precipitation, and limited runoff. Spring lakes have a permanent outlet, but no inlet. The primary source of water for spring lakes is groundwater flowing into the bottom of the lake from inside and outside the immediate surface